CLAIMS

1. A method for providing an indication of aircraft height relative to an obstruction in a terrain awareness warning system, comprising:

   receiving a first datum indicative of a geographic feature of an obstruction;

   receiving a second datum indicative of a distance of the geographic feature from an aircraft;

   receiving a third datum indicative of a height of the aircraft;

   receiving a fourth datum indicative of a speed of the aircraft;

   calculating a projected height of the aircraft at the location of the obstruction using the first through fourth data;

   generating a result signal based on the projected height and the first datum; and

   displaying an indication on a display screen based on the generated result signal.

2. The method of claim 1, wherein the first datum is a height of the obstruction.

3. The method of claim 3, wherein the indication is a colored area on a display screen having a color selected from the group consisting of: red, yellow, green, and black.

4. The method of claim 1, wherein the receiving a fourth datum step further comprises: resolving the speed of the aircraft into components including a lateral speed and a vertical speed.

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5. The method of claim 2, further comprising calculating a pitch angle of the aircraft from the received fourth datum.

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6. The method of claim 5, further comprising calculating an effective altitude of the aircraft by adding to the third datum a value equal to the second datum multiplied by the tangent of the pitch angle.

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7. The method of claim 6, further comprising generating a first alert signal if the effective altitude is less than the sum of the first datum and a safety elevation.

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8. The method of claim 7, wherein the safety elevation is zero.

9. The method of claim 7, further comprising sounding an audible alarm as the first alert signal.

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10. The method of claim 7, further comprising displaying a first colored indication at a display location corresponding to the second datum as the first alert signal.

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11. The method of claim 10, wherein the colored indication is a red area.

12. The method of claim 6, further comprising generating a second alert signal if the effective altitude is greater than the sum of the first datum and a safety elevation but less than a sum of the first datum, the safety elevation, and a first distance.

13. The method of claim 12, further comprising displaying a second colored indication at a display location corresponding to the second datum as the second alert signal.

14. A computer program, stored in a machine-readable format, for a terrain awareness warning system, for causing a computer to:

    receive a first datum indicative of a geographic feature of an obstruction;

    receive a second datum indicative of a distance of the geographic feature from an aircraft;

    receive a third datum indicative of a height of the aircraft;

    receive a fourth datum indicative of a speed of the aircraft;

    calculate a projected height of the aircraft at the location of the obstruction using the first through fourth data; and

    generate a result signal based on the projected height and the first datum.

15. An apparatus for providing an indication of aircraft
height relative to an obstruction in a terrain
awareness warning system, comprising:

a first input for a first signal from an instrument
measuring a height of an aircraft;

a second input for a second signal from an instrument
measuring a location of the aircraft;

a third input for a third signal from an instrument
providing information about geographic features
of terrain surrounding the aircraft;

a fourth input for a fourth signal from an instrument
measuring a speed of the aircraft;

means for employing the signals from the first through
fourth inputs to calculate an effective height of
the aircraft relative to at least the third
input; and

a screen display for displaying the results of the
calculation.

16. The apparatus of claim 15, wherein the instrument
measuring a height of the aircraft and the instrument
measuring a location of the aircraft is an altimeter,
and wherein the instrument providing information about
geographic features of terrain surrounding the
aircraft and the instrument measuring a speed of the
aircraft is an aid to navigation.

17. The apparatus of claim 16, wherein the aid to
navigation is a global positioning system unit.

18. The apparatus of claim 15, further comprising a conventional TAWS altitude display and means to toggle the screen display between the conventional TAWS altitude display and the screen display for displaying the results of the calculation.

19. The apparatus of claim 15, wherein the first through fourth inputs form at least a portion of a parallel data bus.

20. The apparatus of claim 15, wherein the first through fourth inputs form at least a portion of a serial data stream.

21.   A method of performing terrain awareness warning
      for an aircraft, comprising:
      collecting data of terrain features in the vicinity
5   of an aircraft;
      collecting data of the distance and bearing of the
          terrain features from the aircraft;
      collecting data of the height and speed of the
          aircraft;
10   calculating a projected height of the aircraft at the
          location of each of the terrain features based
          on the collected data of the height and speed of
          the aircraft;
      generating result signals based on the projected
15   height, the collected data of terrain features,
          and the bearing of the terrain features; and
      displaying indications on a display screen with
          respect to bearing based on the generated result
          signals.
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22. A method for providing an indication of lateral aircraft position relative to an obstruction in a terrain awareness warning system, comprising:

receiving a first datum indicative of the bearing of an obstruction relative to an aircraft;

receiving a second datum indicative of a distance of the obstruction from the aircraft;

receiving third data indicative of a speed of the aircraft;

calculating a projected flight path of the aircraft relative to the obstruction using the first through third data and determining a distance between the projected flight path and the obstruction at a series of points along the projected flight path;

generating a result signal based on the determined distance; and

displaying an indication on a display screen based on the generated result signal with respect to the bearing.